MICHIGAN STATE UNIVERSITY

NORTH CENTRAL SARE
Sustainable Agriculture Research & Education

VALUES AND WELLBEING FOR CATTLE PRODUCERS

Research Project Final Report for Participants

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Dr. Matt Raven with farmers at Lake City, MI. Photo by Dr. Morgan MathisonSlee

Acknowledgement

We sincerely thank to all farmers who participated in this three-year research project. Your time, insights, and collaboration were invaluable. This work would not have been possible without your trust and dedication.

Thank you!

Background

Grasslands are a crucial part of the US agricultural sector and yet demonstrate increased degradation and thus decreasing ecological wellbeing. The difficulty of making management decisions on this degraded resource base is compounded by challenges to social and economic wellbeing for producers. However, given the cultural importance of cattle production, producers continue to engage with it, putting the resource base and their livelihoods at potentially greater risk. Although the evidence base of successful regenerative management is increasing, particularly in grazing, there are few long-term studies of the environmental, social, *and* economic benefits following adoption, and none within the North Central region.

Thus, our research project had four goals:

1. To better understand how to monitor social, economic, and ecological wellbeing in farming,
2. To identify links between wellbeing and grazing strategy,
3. To better understand the trade-offs between types of wellbeing,
4. To tailor education materials to support increased adoption of grazing strategies that benefit wellbeing.

We conceptualize wellbeing (WB) broadly and sustainability as 'maintenance of wellbeing over time', therefore ecological, social and economic wellbeing outcomes are treated as indicators of sustainability.

Project Structure

Participants:

An online recruitment survey was distributed widely to pasture-based beef producers during the winter of 2021 and spring of 2022 through the Michigan State University Extension, Michigan Cattleman's Association, and related networks. We received 98 responses, and 61 farmers were invited to participate. A final group of 44 farmers from 37 farms joined this project. Based on their management practices, the 44 farmers represented 3 distinct groups:

- Continuous grazing (continuous, n=10)
- Adopting Holistic Planned Grazing (adopting, n=19)
- Holistic Planned Grazing (HPG/adaptive, n=15)

Annual Data Collection Activities (2022, 2023, 2024):

Data collection tools were developed or adapted to monitor ecological, social and economic wellbeing of the participanting farms. The following data was collected:

1. Ecological Health Index Monitoring (2022, 2023, 2024)

Ecological wellbeing is a way of thinking about the health of the environment through a systemic approach. Instead of focusing on "health as productivity" we focused on the ability of the ecosystem to function at its full potential.The Ecological Outcome Verification (EOV) protocol was used to monitor 15 ecological indicators and create 4 ecosystem functions (water cycle, mineral cycle, energy flow, community dynamics), which are then integrated to calculate an Ecological Health Index (EHI).

CODE	INDICATOR	ASSESSING	RANGE	TYPE	WC	MC	EF	CD
lca	Live Canopy Abundance	Total green biomass production	-10 to 10	Relative		✓	✓	
lca	Living Microorganisms	Evidence of microorganisms	-10 to 10	Absolute				
fg1	Warm Season Perennial Grasses	Vigor, repreduction, (crown) integrity	-10 to 10	Relative				✓
fg2	Cool Season Perennial Grasses	Vigor, repreduction, (crown) integrity	-10 to 10	Relative				✓
fg3	Forbs & Legumes	Vigor, repreduction, (crown) integrity	-10 to 10	Relative				✓
fg4	Trees & Shrubs	Vigor, repreduction, (crown) integrity	-10 to 10	Relative				✓
cds	Contextually Desireable Species	Frequency	0 to 10	Relative				✓
cus	Contextually Undesireable Species	Frequency	-10 to 0	Relative				✓
la	Litter Abundance	% cover	0 to 10	Relative	✓	✓		
li	Litter Decomposition	Litter incorporation/soil contact	0 to 10	Absolute		✓		
dd	Dung Decomposition	Persistance of dung	0 to 10	Absolute		✓		
bs	Bare Soil	% bare soil	-20 to 20	Relative	✓	✓	✓	✓
c	Capping	Soil surface resistance	-10 to 0	Absolute	✓			
wie	Wind Erosion	Blowouts, dams, pedestals	-20 to 0	Absolute	✓			
wae	Water Erosion	Rills, dams, gullies	-20 to 0	Absolute	✓			
		total points	-140 to 120					
WC = Water Cycle, MC = Mineral Cycle, EF = Energy Flow, CD = Community Dynamics								
Relative = compared to your ecoregion's potential; Absolute = not relative, same globally								

2. Social Wellbeing Survey (2022, 2023, 2024)

Wellbeing is broadly defined as quality of life and the ability of people to contribute to the world with a sense of meaning and purpose. We used a survey based on the novel integration of five domains of wellbeing:

1.Life Satisfaction (LS): feeling good about one's life as a whole.
2.Hedonic Wellbeing (HWB): the experience of positive and the absence of negative emotions in life.
3.Eudaimonic Wellbeing (EWB): a sense of accomplishment, and engaging in activities that provide a sense of purpose and fulfilment in one's life.
4.Relational Wellbeing (RWB): feeling loved, supported, and valued by those we have relationships with.
5.Physical Wellbeing (PWB): being physically and mentally healthy to engage in daily activities, and having the economic resources that support enjoying life.

3. *Economic Wellbeing Analyses (2023, 2024)*

3.1 Subjective Analysis (2023, 2024)

We developed a survey to ask about farm (F) and household (H) perceptions of the capacity to:
- Fullfill present and recurrent financial obligations (short-term needs - FSN and HSN),
- Make consumption decisions without financial stress (short-term wants - FSW and HSW),
- Prepare for economic contingencies (long-term needs - FLN and HLN),
- Pursue future financial goals (long-term wants - FLW and HLW).

3.2 Objective analysis (2022, 2023, 2024)

A set of farm and household financial records were also collected to create the following objective metrics:

Household	Farm
Household Solvency (HS), Liquidity (HL), Investment (HI).	Farm solvency (FS), Liquidity (FL), Profitability (FP), Repayment and Replacement Capacity (FRRC), Financial Efficiency (FFE)

These objectives indicators are in a scale from 1 to 5, so they can be integrated with the subjective indicators in 3.1.

Findings

Goal 1. To better understand how to monitor social, economic, and ecological wellbeing in farming

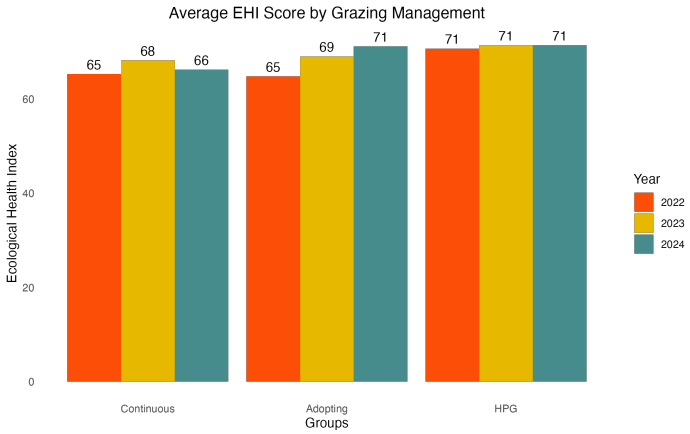
Using the data collection tools in multiple years allowed us to validate them and feel confident in the data quality. The EOV and social wellbeing tools are now peer-reviewed and publicly available ([1],[2]) while the economic wellbeing tools are part way through that process.

[1] Savory Institute. (2021). Ecological Outcomes Verification (EOV) 3.0 Manual. In (3 ed.). Savory Institute.

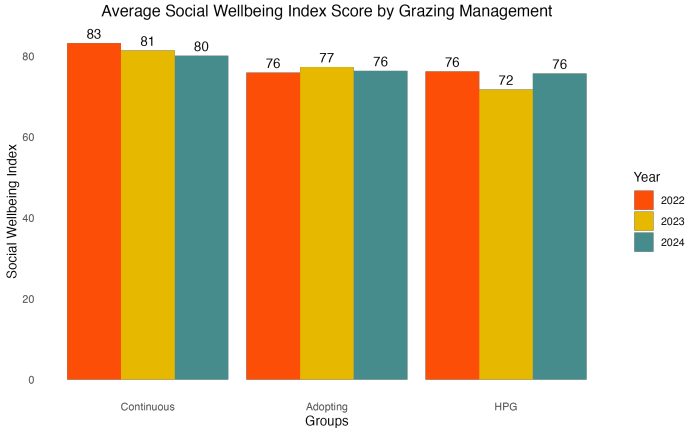
[2] Vivas, J., & Hodbod, J. (2024). Exploring the relationship between regenerative grazing and Ranchers' wellbeing. Journal of Rural Studies, 108, 103267.

Goal 2. To identify links between wellbeing and grazing strategy

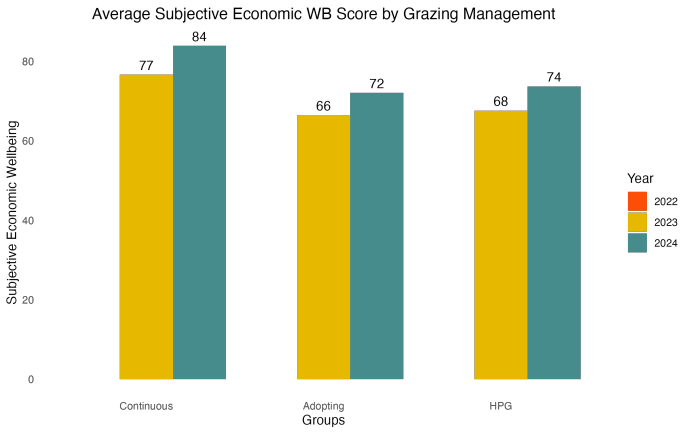
Preliminary analyses of Ecological WB data shows results as we'd expect - that EHI scores for the adopting group were lower than the HPG group, but slightly higher than the continuous group.We see similar patterns for all three groups across the ecosystem function cycles, and overall scores suggest the land is stabilizing, although continuous grazing is more likely to result in land degradation.



The SWB data indicates that all groups of farmers are reporting healthy levels of wellbeing. While there is little variation, we observed a decline in the scores of the continuous group, while the other groups seem to be more stable. We see similar patterns for all three groups across the ecosystem function cycles, and overall scores suggest the land is stabilizing, although continuous grazing is more likely to result in land degradation. Observing these trends over the years offer a valuable perspective for understanding the relationship of grazing practices and social wellbeing



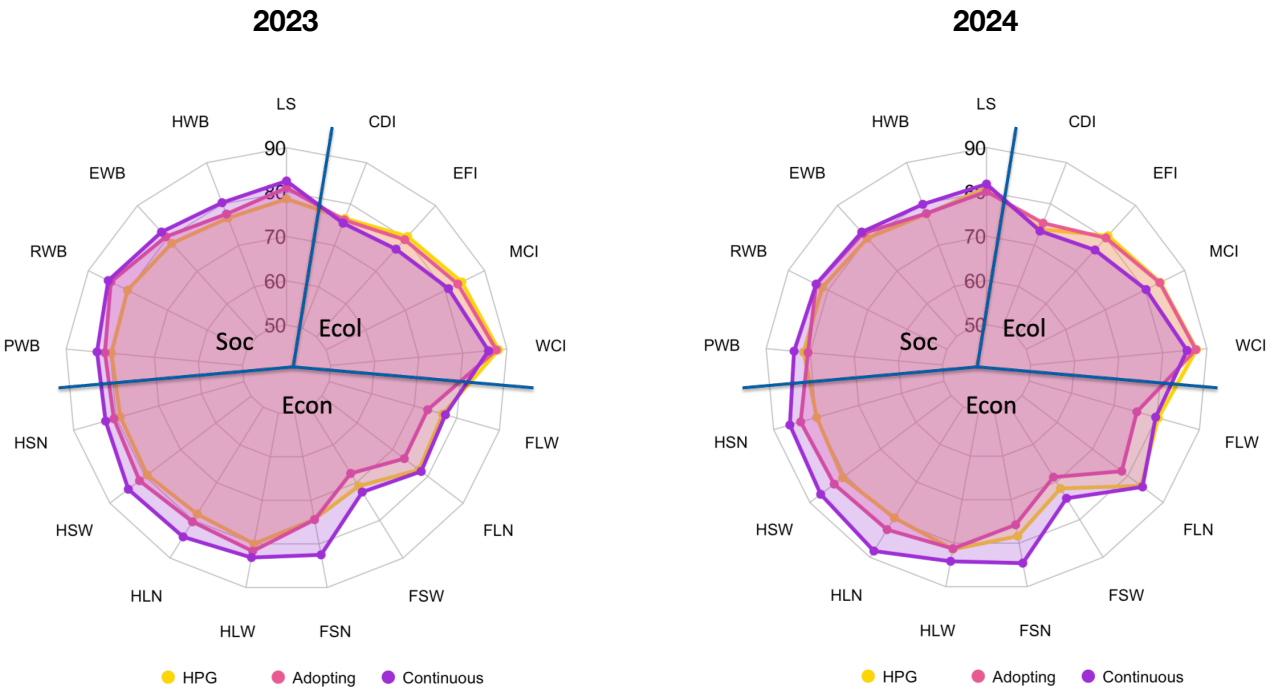
Our data shows all farmers are feeling good about their economic conditions but in general more satisfied with their household finances than their farm's. Economic wellbeing varies significantly among farms, and farmers using continuous grazing reported higher scores. Additionally, by linking the sociodemographic data, we observed that age, land size, location, education, household income, and expenditure are factors influencing farmers economic wellbeing.



Goal 3: To better understand the trade-offs between types of wellbeing.

We looked into the trade-off of the different wellbeing metrics we recorded. As data collection is still ongoing for the objective economic wellbeing data, this section only integrates the subjective elements of the three types of wellbeing: :

- 4 ecological wellbeing elements
- 5 social wellbeing elements
- 8 subjective economic wellbeing elements



In our analysis of the integration results, we observed similar outcomes across groups in 2023 and 2024, with some notable nuances:

1. **Ecological Health**: Among the four ecosystem processes, community dynamics (biodiversity) consistently scored lower for all groups. This is likely because Michigan has traditionally removed trees from fields and pastures, which limits biodiversity. The other three processes—energy flow, and mineral and water cycles—scored higher for the adopting and holistic planned grazing (HPG) groups compared to the continuous group.

2. **Social Wellbeing**: The continuous group scored higher in social wellbeing than the adopting and HPG groups. This could reflect differences between those who have adapted to their current management practices and maintain stable social wellbeing, versus those transitioning or adjusting to new practices.

3. **Economic Wellbeing**: Patterns in economic wellbeing mirror those of social wellbeing but reveal more pronounced differences. Viewing the three groups as stages in the adoption process, we can interpret the shift from continuous to adopting as a period of financial uncertainty, particularly for the farm. Farmers in this stage may experience significant changes in their ability to make consumption decisions without stress or pursue long-term financial goals. However, as they move from adopting to HPG, subjective financial conditions on the farm improve, suggesting that stability and confidence increase as grazing management becomes more established.

As we continue working on the data, we will be comparing the objective financial metrics with the current results to confirm if our intuition holds. Future work will also expand the integration of other objectives metrics (i.e for ecological wellbeing) and answer why such changes in the three wellbeing types happen.

Learning resources

If you would like to read more, you are welcome to access to the following resources available as a result of this research project:

- Training:
  - EOV training materials
  - Financial analysis D2L course
  - Financial analysis tool bit.ly/farm-analysis; article and video on the MSUE website

- Academic papers + extension bulletins:
  - Vivas, J., & Hodbod, J. (2024). Exploring the relationship between regenerative grazing and Ranchers' wellbeing. Journal of Rural Studies, 108, 103267. https://doi.org/10.1016/j.jrurstud.2024.103267
  - Vivas (2024). Beyond the land: How regenerative grazing improves farmer wellbeing. Michigan State University Extension. https://www.canr.msu.edu/news/beyond-the-land-how-regenerative-grazing-improves-farmer-wellbeing.

Upcoming:
- Dong et al. (in review). Financial Wellbeing of Rural Households: A Theoretical Framework and Applications.
- Vivas et al. (in prep). A sustainability assessment framework for grazing-based beef operations, evidence from Midwest USA